

IN THE CLAIMS

1. A shoe suspension system adapted for use with a shoe or boot comprising:

an upper sole engaged to the bottom of the shoe or boot having an upper toe sole and an upper mid heel sole, the upper toe sole being pivotally engaged to the upper mid heel sole;

a lower sole having a lower toe sole, a lower mid sole and a lower heel sole;

a first tandem hinge pivotally engaged between the upper toe sole and the lower toe sole which opens and closes parallel to a longitudinal axis of the shoe;

a plurality of tandem hinges pivotally engaged between the upper mid heel sole and the lower sole which open and close parallel to the longitudinal axis of the shoe; and

at least one return spring engaged between the upper mid heel sole and the lower sole.

2. The shoe suspension system according to claim 1, wherein a second and a third tandem hinge of the plurality of tandem hinges are pivotally engaged between the upper mid heel sole and the lower sole;

wherein the second and third tandem hinges each have two upper struts and two power struts.

3. The shoe suspension according to claim 2, wherein first ends of the two upper struts are pivoted together at a point on the upper mid heel sole and first ends of the two lower struts are pivoted together at a point on the lower sole;

wherein second ends of the two upper struts and second ends of the two lower struts are respectively pivoted together by a first and second pivot.

4. The shoe suspension system according to claim 3;

wherein the second tandem hinge and the third tandem hinge are engaged together by a first and a second connecting rod;

wherein the first connecting rod is pivotally engaged between the first pivot on the second tandem hinge and the first pivot on the third tandem hinge and the second connecting rod is pivotally engaged between the second pivot on the second tandem hinge and the second pivot on the third tandem hinge;

wherein the first and second connecting rods are slidably engaged together.

5. The shoe suspension system according to claim 4;

wherein a fourth tandem hinge located between the second and third tandem hinges is pivotally engaged to the upper sole and the lower sole, and

a pair of return springs are located on the fourth tandem hinge.

6. The shoe suspension system according to claim 2;

wherein first ends of the two upper struts and the two lower struts of the second tandem hinge are respectively spaced apart and pivotally engaged at two points on the upper mid heel sole and the lower sole; and

wherein second ends of the two upper struts and the two lower struts are respectively pivotally engaged together by a first and second pivot which are spaced apart a distance less than that of the first ends;

wherein first ends of the upper struts of the third tandem hinge are pivoted together at a point on the upper mid heel sole and first ends of the two lower struts are pivoted together at a point on the lower sole; and

ends second of the two upper struts and the two lower struts of the third tandem hinge are respectively pivoted together by a third and fourth pivot.

7. The shoe suspension system according to claim 6;

wherein the second tandem hinge and the third tandem hinge are engaged together by a first and a second connecting rod;

wherein the first connecting rod is pivotally engaged between the first and third pivots and the second connecting rod is pivotally engaged between the second and fourth pivots;

wherein the first and second connecting rods are slidably engaged together.

8. The shoe suspension system according to claim 7;

wherein the first, second and third tandem hinges are pivotally engaged to the lower sole to permit the lower sole to pivot transversely around the longitudinal axis of the shoe.

9. The shoe suspension system according to claim 2;

wherein first ends of the two upper struts and the two lower struts of both the second and the third tandem hinges are respectively spaced apart and pivotally engaged at two points on the upper mid heel sole and the lower sole;

wherein the second ends of the two upper struts and the two lower struts of the second and third tandem hinge are

respectively pivotally engaged together by a first and second pivot;

wherein the first and second pivots of the second tandem hinge are spaced apart a distance less than that of the first ends;

wherein the first and second pivots of the third tandem hinge are spaced apart a distance greater than that of the first ends.

10. The shoe suspension according to claim9;

wherein the second tandem hinge and the third tandem hinge are engaged together by a first and a second connecting rod;

wherein the first connecting rod is pivotally engaged between the first pivot of the second tandem hinge and the first pivot of the third tandem hinge and the second connecting rod is pivotally engaged between the second pivot of the second tandem hinge and the second pivot of the third tandem hinge;

wherein the first and secondary connecting rod are slidably engaged together.

11. The shoe suspension according to claim 10;

wherein the first ends of the two lower struts of the second and third tandem hinges are pivotally engaged to a ladder frame fixed on the lower sole.

12. The shoe suspension according to claim 11;
wherein the lower toe sole is pivotally engaged to the lower mid sole.

13. The shoe suspension according to claim 12;
wherein a length of lower struts of the first tandem hinge are shorter than that of the upper struts of the first tandem hinge.

14. The shoe suspension system according to claim 13;

wherein a fourth and fifth tandem hinge are pivotally engaged between the upper mid heel sole and the lower sole which open and close transverse to the longitudinal axis of the shoe.

15. The shoe suspension system according to claim 14;

wherein the fourth and fifth tandem hinge are engaged on opposite ends of the upper mid heel sole.

16. The shoe suspension system according to claim 4;

wherein the first and second connecting rods are slidably engaged together within a tube.

17. The shoe suspension system according to claim 10;

wherein the second connecting rod is slidably engaged within the first connecting road.